

## CLAIMS

What is claimed is:

1. An isolated, enriched, or purified nucleic acid molecule encoding a PTP20, PCP-2, BDP1, mCLK2, mCLK3, mCLK4, or SIRP polypeptide.

2. The nucleic acid molecule of claim 1, wherein said nucleic acid molecule is isolated, enriched, or purified from a mammal.

3. The nucleic acid molecule of claim 1, wherein said molecule encodes at least 12 contiguous amino acids of the full length amino acid sequence of Figure 1, 2, 3, 4, or 5.

20 4. A nucleic acid probe for the detection of a nucleic acid molecule encoding a PTP20, PCP-2, BDP1, mCLK2, mCLK3, mCLK4, or SIRP polypeptide in a sample.

25 5. The probe of claim 4 wherein said polypeptide comprises at least 25 contiguous amino acids of the amino acid sequence shown in Figure 1, 2, 3, 4, or 5.

30 6. A nucleic acid vector comprising a nucleic acid molecule encoding a PTP20, PCP-2, BDP1, mCLK2, mCLK3, mCLK4, or SIRP polypeptide and a promoter effective to initiate transcription in a host cell.

35 7. A recombinant host cell or tissue comprising a nucleic acid molecule encoding a PTP20, PCP-2, BDP1, mCLK2, mCLK3, mCLK4, or SIRP polypeptide.

40 8. A recombinant nucleic acid molecule comprising a transcriptional region functional in a cell, a sequence complementary to an RNA sequence encoding a PTP20, PCP-2, BDP1, mCLK2, mCLK3, mCLK4, or SIRP polypeptide and a transcriptional termination region functional in a cell.

5        9.        An isolated, enriched or purified PTP20, PCP- 2,  
BDP1, mCLK2, mCLK3, mCLK4, or SIRP polypeptide.

10      10.       The isolated, enriched, or purified polypeptide of  
claim 9, wherein said polypeptide is a unique fragment.

15      11.       The polypeptide of claim 10, wherein said  
polypeptide comprises at least 12 contiguous amino acids present  
in the full length amino acid sequence shown in Figure 1, 2, 3, 4,  
or 5.

15      12.       The polypeptide of claim 11 wherein said  
polypeptide is isolated, purified, or enriched from a mammal.

20      13.       An antibody or an antibody fragment having specific  
binding affinity to a PTP20, PCP-2, BDP1, mCLK2, mCLK3, mCLK4, or  
SIRP polypeptide.

25      14.       The antibody of claim 13 wherein said polypeptide  
comprises at least 4 contiguous amino acids of the amino acid  
sequence shown in Figure 1, 2, 3, 4, or 5.

30      15.       A hybridoma which produces an antibody having  
specific binding affinity to a PTP20, PCP-2, BDP1, mCLK2, mCLK3,  
mCLK4, or SIRP polypeptide.

35      16.       The hybridoma of claim 15 wherein said polypeptide  
comprises at least 25 contiguous amino acids of the amino acid  
sequence shown in Figure 1, 2, 3, 4, or 5.

35      17.       The hybridoma of claim 16 wherein said polypeptide  
is isolated, purified, or enriched from a mammal.

40      18.       An isolated, enriched, or purified nucleic acid  
molecule comprising a nucleotide sequence that:

Figure 1, 2, 3, 4, or 5;  
the complement of the nucleotide sequence of (a);

- 5        hybridizes under highly stringent conditions to the nucleic acid molecule of (a) and encodes a naturally occurring PTP20, PCP-2, BDP1, mCLK2, mCLK3, mCLK4, or SIRP protein;
- 10      encodes a PTP20 protein having the full length amino acid sequence set forth in Figure 1 except that it lacks one or more of the following segments of amino acid residues 1-58, 59-294, 295-453;
- 15      encodes a mCLK2, mCLK3, or mCLK4 protein having the full length amino acid sequence as set forth in Figure 4 except that it lacks one or more of the following segments of amino acid residues 1-182, 183-470, or 471-499 of mCLK2, 1-176, 177-473, or 474-496 of mCLK3, or 1-183, 184-486, or 486-489 of mCLK4;
- 20      encodes a SIRP protein having the full length amino acid sequence set forth in Figure 5 except that it lacks one of the following segments of amino acid residues: extracellular domain, transmembrane domain, cytoplasmic domain, and tyrosine bearing SH2 binding region in the cytoplasmic domain;
- 25      encodes a polypeptide having the full length amino acid sequence set forth in Figure 1, 2, 3, 4, or 5 except that it lacks one or more of the domains selected from the group consisting of an N-terminal domain, a catalytic domain, and a C-terminal region;
- 30      encodes a polypeptide having the full length amino acid sequence set forth in Figure 5 except that it lacks at least one, but no more than two, of the domains selected from the group consisting of the extracellular domain, the transmembrane domain, and the SHP-2 binding domain;
- 35      the complement of the nucleotide sequence of (d)-(h);
- 40      encodes a polypeptide having the amino acid sequence set forth in Figure 1 from amino acid residues 1-58, 59-294, or 295-453;
- 45      encodes a polypeptide having the amino acid sequence set forth in Figure 4 from amino acid residues 1-182, 183-470, or 471-499 of mCLK2;
- 50      encodes a polypeptide having the amino acid sequence set forth in Figure 4 from amino acid residues 1-176, 177-473, or 474-496 of mCLK3;
- 55      encodes a polypeptide having the amino acid sequence set forth in Figure 4 from amino acid residues 1-183, 184-486, or 486-489 of mCLK4; and
- 60      the complement of the nucleotide sequence of (j)-(m).

19. A nucleic acid vector comprising a nucleic acid molecule of claim 18.

20. A recombinant cell or tissue comprising a nucleic acid molecule of claim 18.

21. A method of detecting a compound capable of binding to a PTP20, PCP-2, BDP1, mCLK2, mCLK3, mCLK4, or SIRP polypeptide comprising the steps of incubating said compound with said polypeptide and detecting the presence of said compound bound to said polypeptide.

22. A method of identifying a compound capable of activating or inhibiting PTP20, PCP-2, BDP1, mCLK2, mCLK3, mCLK4, or SIRP protein phosphorylation activity wherein said method comprises the following steps:

adding a compound to a mixture containing a PTP20, PCP-2, BDP1, mCLK2, mCLK3, mCLK4, or SIRP protein polypeptide and a substrate for said protein; and

detecting a change in phosphorylation of said substrate.

23. A method of identifying compounds useful for diagnosis or treatment of an abnormal condition in an organism, wherein said abnormal condition is associated with an aberration in a signal transduction pathway characterized by an interaction between a polypeptide and a natural binding partner, wherein said polypeptide is a PTP20, PCP-2, BDP1, mCLK2, mCLK3, mCLK4, or SIRP polypeptide, comprising the following steps:

adding a compound to cells; and

35 detecting whether the compound promotes or disrupts said interaction between the polypeptide and a natural binding partner.

24. A method for diagnosis of a disease or condition characterized by an abnormality in a signal transduction pathway, wherein said signal transduction pathway includes an interaction 40 between a PTP20, PCP-2, BDP1, mCLK2, mCLK3, mCLK4, or SIRP polypeptide and a natural binding partner, comprising the step of detecting the level of said interaction as an indication of said disease or condition.

5        25.        A method for treatment of an organism having a  
disease or condition characterized by an abnormality in a signal  
transduction pathway, wherein said signal transduction pathway  
includes an interaction between a PTP20, PCP-2, BDP1, mCLK2,  
mCLK3, mCLK4, or SIRP polypeptide and a natural binding partner  
10 comprising the step of promoting or disrupting said interaction.

26.        The method of any one of claims 21-25 wherein said  
PTP20, PCP-2, BDP1, mCLK2, mCLK3, mCLK4, or SIRP polypeptide is  
isolated from a mammal.

15        27.        The method of any one of claims 21-25- wherein said  
organism is a mammal.

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